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Assessment of Sleep Disorder among Autistic Children

تقييم اضطرابات النوم لدى الأطفال المصابين بالتوحد

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الخلاصة:

الهدف: تهدف الدراسة الى تقييم اضطرابات النوم بين لأطفال المصابين بداء التوحد والتعرف على العلاقة بين اضطرابات النوم للأطفال المصابين بداء التوحد والخصائص الديموغرافية التي تتضمن (العمر، الجنس، السكن، المستوى التعليمي للأم، الحالة المهنية للأم، و الدخل الشهري).

المنهجية: دراسة تحليلية وصفية حيث أجريت في كل من معهد رامي ومعهد الرحمن ومعهد النور لرعاية الأطفال المصابين بالتوحد للمدة بين 2 كانون الأول 2011 ولغاية 6 شباط 2012. ولتحقيق أهداف الدراسة اختيرت عينة غرضية غير احتمالية مكونة من (80) طفل مسجل في المعاهد أعلاه وحسب معايير خاصة بهم، جمعت البيانات الخاصة بالدراسة من خلال أم الطفل المصاب بالتوحد وفق استمارة تم بناؤها وتصميمها من قبل الباحثون لأغراض الدراسة الحالية. تم تحقيق ثبات أدوات القياس من خلال استعمال معامل ارتباط بيرسون والذي كانت (0,85). أما مصداقية المقياس فقد تحققت من خلال عرضها على مجموعة من الخبراء لغرض مراجعتها وتقويم درجة مصداقيتها. قام الباحثون باستعمال الإحصاء الوصفي (التوزيع التكراري والنسبة المئوية ومعدل القياس) والإحصاء الاستنتاجي (اختبار مربع كاي) لغرض تحليل بيانات الدراسة.

النتائج: أظهرت الدراسة بان اغلب فقرات التقييم الخاصة باضطرابات النوم قد حصلت على مستوى عالي للمتوسط الحسابي .

الاستنتاج: إستنتجت الدراسة الى ان معظم الأطفال المصابين بالتوحد لديهم اضطرابات في النوم.

التوصيات: أوصت الدراسة الى ضرورة تهيئة برنامج روتين ليلي للنوم من قبل مقدم الرعاية الصحية للطفل كأعطاء الطفل حماماً أو قراءة قصة تعطى لطفل ليلاً في نفس الوقت الذي يشجع فيه الطفل الذهاب الى الفراش لنوم , ومساعدة الطفل على الاسترخاء قبل النوم من خلال قراءة كتاب، تدليك الظهر، أو تشغيل الموسيقى الهادئة، تجنب التلفزيون وألعاب الفيديو، وأنشطة أخرى مرهقة قبل النوم.

Abstract:

Objectives: The study objectives are to identify sleep disorders among children with autism and to identify the association between sleep disorders for children with autism and their demographic characteristics including (age, gender, housing, educational level for mother, occupation status of the mother, and monthly income).

Methodology: A descriptive analytical study. The study was conducted at the Rami Institute for the care of children with autism, Rahman Institute for the care of children with autism, and Noor Institute for the care of children with autism for the period between 2nd Dec. 2011 up to the 6th Feb. 2012. To achieve the objectives of the study, a non-probability (purposive) samples of (80) a child who was registered in the Institutes for the care of children with autism which indicate as above and according to special criteria. Data were collected by mother of the child suffering from autism. Instrument validity was determined through content validity, by a panel of experts. Reliability of the instrument was determined through the use of Pearson correlation coefficient for the test-retest approach, which was (0.85). Analysis of data was performed through the application of descriptive statistics (frequency, percentage, and mean of score) and inferential statistics (Chi-square (χ^2) test).

Results: The study showed that most of the items of sleep disorders own evaluation has got a high level of the arithmetic mean average.

Conclusion: The researcher can conclude most of children with autism have sleep disorder.

Recommendations: The study recommended the need to initialize the routine night to sleep by a health care provider for your child to give the child a bath or reading a story given to the child at night at the same time encourages the child to go to bed to sleep, and to help the child relax before bedtime by reading a book, back massage, or play soothing music, avoid TV and video games, and other stressful activities before bed.

Keywords: Sleep disorders, autism, communication

INTRODUCTION:

Autism is a disorder of neural development characterized by impaired social interaction and communication, and by restricted and repetitive behavior. These signs all begin before a child is three years old ⁽¹⁾. Autism affects information processing in

the brain by altering how nerve cells and their synapses connect and organize; how this occurs is not well understood⁽²⁾. The severity of symptoms ranges from a mild learning and social disability to a severe impairment, with multiple problems and highly unusual behavior. The disorder may occur alone, or with accompanying problems such as mental retardation or seizures. Autism is not a rare disorder, being the third most common developmental disorder, more common than Down's syndrome⁽²⁾.

The prevalence of autism is about (1–2) per 1,000 people worldwide; however, the Centers for Disease Control and Prevention reports approximately (9) per 1,000 children in the United States are diagnosed with autism spectrum disorder⁽³⁾. The number of people diagnosed with autism has increased dramatically since the 1980, partly due to changes in diagnostic practice; the question of whether actual prevalence has increased is unresolved⁽⁴⁾.

Sleep disorders may be even more common in children with autism. Researchers estimate that between 40% and 80% of children with autism has difficulty sleeping. The biggest sleep problems among these children include: Difficulty falling asleep; Inconsistent sleep routines; Restlessness or poor sleep quality; and waking early⁽⁵⁾.

The problem for autistic children in Iraq that almost nothing is known about this condition. No clear statistics about number of people were affected by autism as much of the country's health records had been destroyed after war. Only one of its kinds in the Iraq is Rami Institute for autistic and slow learners, although there may be at least 3,000 autistic children in Iraq⁽³⁾.

OBJECTIVES:

1. To identify sleep disorders for children with autism.
2. To identify the association between sleep disorders for children with autism and their demographic characteristics including (age, gender, housing, educational level for mother, occupation status of the mother, and monthly income).

METHODOLOGY:

Design of the study: A descriptive analytical study was conducted on children suffering from autism disorder.

Period of the study: between 2nd Dec. 2011 up to the 6th Feb. 2012.

Setting of the study: The study was conducted at the Rami Institute for the care of children with autism, Rahman, Institute for the care of children with autism, and Noor Institute for the care of children with autism.

Sample of the study: A non-probability (purposive) samples of 80 child's who was registered in the Institutes for the care of children with autism which indicate as above and according to the following criteria:-

1. Children diagnosis with autism disorder.
2. Children registered in the Institutes for the care of children with autism.
3. Children with different age.

Instrument of the study: After extensive review of relevant literature, studies, the researcher constructed the questionnaire and was used as mean of data collection. It was comprised of three major parts.

Part I: Patients' demographic characteristics: concerned the determination of the demographic characteristics of these children which included age, gender, and housing.

Other items include: Is there a house for childcare and receive instructions about taking care of him under accommodation, educational level of mother, age of mother at the birth of the child, occupation status of the mother, and monthly income.

Part II: This part is concerned the time which child takes for sleep during bedroom that consist from (2) items.

Part III: This part is concerned with the information about child sleep that consist from (25) items. The items were ordinal according to the five level scale which were scored as (never = 1, occasionally = 2, sometimes = 3, often =4, always = 5) for each level respectively so the cut off point was (2).

Validity of the Instrument: Content validity was determined through the use of panel of experts.

Reliability of the Instrument: Test retest reliability of the item scale was determined as average of($r=0.85$).

Data collection: The data were collected by self-reporting by mother of the child suffering from autism for the period from 3rd to 29th Jan. 2012.

Statistical data analysis: Appropriate statistical approach is used that includes descriptive statistics (frequency, percentage, and mean of score) and inferential statistics (Chi-square (x2) test).

RESULTS:

Table 1. Distribution of sample (child) by their demographic characteristics

No.	Variables		
1.	Age of the child (years)	NO.	%
1.1.	3-6	38	47.5
1.2.	7-10	30	37.5
1.3.	11-14	12	15
	Total	80	100
2.	Gender	NO.	%
2.1.	Male	59	73.8
2.2.	Female	21	26.2
	Total	80	100
3.	Housing	F	%
3.1.	Urban	73	91.2
3.2.	Rural	7	8.8
	Total	80	100

NO. =Number, %=Percent

This table reveals that the majority (47.5%) of sample were (3-6) years old. (73.8%) were males. (91.2%) of sample live in urban house

Table 2. Distribution of sample (mother of child) by their demographic characteristics

1.	Educational level of mother	NO.	%
1.1.	Illiteracy	1	1.25
1.2.	Read and write	5	6.25
1.3.	Primary school graduate	3	3.75
1.4.	Intermediate School graduate	13	16.25
1.5.	High School graduate	13	16.25
1.6.	Institute or college graduate	45	56.25
	Total	80	100
2.	Age of mother at the birth of the child	NO.	%
2.1.	Less than 20 year	5	6.2
2.2.	20-29 year	36	45
2.3.	30-39 year	31	38.8
2.4.	40 year and more	8	10

	Total	80	100
3.	Occupation status of the mother	NO.	%
3.1.	Work	48	60
3.2.	Do not work	32	40
	Total	80	100
4.	Monthly income	NO.	%
4.1.	Adequate	51	63.8
4.2.	Not adequate	29	36.2
	Total	80	100

NO. =Number, %=Percent

This table shows that the educational level of mother (56.2%) was graduated from institute or college. In relation to age of mother at the birth of the child (45%) of mother were (20-29) years ago. (60%) of mother work outside the home. (63.8%) of the families, the monthly income was adequate.

Table 3. House for child care and receive instructions

1.	Is there a house for child care and receive instructions about taking care of him in your accommodation?	NO.	%
1.1.	Yes	40	50
1.2.	No	40	50
	Total	80	100

NO. =Number, %=Percent

This table indicates that the (50%) of families have a house for childcare and receive instructions about taking care of him in their accommodation. While was similar percentage for the families who does not have houses for their children care and receive instructions about taking care of him in their accommodation.

Table 4. The time it takes for the child's bedroom

No.	Items		
1.	Hours of sleep does child get on most nights	NO.	%
1.1.	Less than 5 hours	2	2.5
1.2.	5 hours	20	25
1.3.	6-7 hours	28	35
1.4.	8-9 hours	24	30
1.5.	10 -11 hours	6	7.5
	Total	80	100
2.	How long after going to bed does child usually fall a sleep	NO.	%
2.1.	Less than 15 minute	16	20
2.2.	15-30 minute	39	48.8
2.3.	31-45 minute	18	22.5
2.4.	46-60 minute	6	7.5
2.5.	More than 60 minute	1	1.2
	Total	80	100

NO. =Number, %=Percent

The results of table 2 indicate that the majority (35%) of children get (6-7) hours of sleep on most nights. While the most of children (48.8%) need to (15-30) minute after going to bed to fall asleep.

Table 5. The mean of scores and levels of sleep disorder among autistic children

No.	Items	Never		Occasionally		Sometimes		Often		Always		MS	levels
		f	%	f	%	f	%	f	%	f	%		
1.	The child goes to bed reluctantly	23	28.74	23	28.74	20	25	5	6.25	9	11.25	2.42	M
2.	The child has difficulty getting to sleep at night	36	45	15	18.75	14	17.5	7	8.75	8	10	2.2	M
3.	The child feels anxious or afraid when falling asleep	52	65	10	12.5	8	10	9	11.25	1	1.25	1.71	M
4.	The child startles or jerks parts of the body while falling asleep	44	55	5	6.25	10	12.5	7	8.75	14	17.5	2.27	M
5.	The child shows repetitive actions such as rocking or head banging while falling asleep	57	71.25	3	3.75	9	11.25	4	5	7	8.75	1.76	M
6.	The child experiences vivid dream-like scenes while falling asleep	58	72.5	9	11.25	5	6.25	3	3.75	5	6.25	1.6	M
7.	The child sweats excessively while falling asleep	43	53.75	11	13.75	11	13.75	8	10	7	8.75	2.06	M
8.	The child wakes up more than twice per night	32	40	23	28.74	11	13.75	9	11.25	5	6.25	2.15	M
9.	After waking up in the night ,the child has difficulty to fall asleep again	36	45	15	18.75	10	12.5	7	8.75	12	15	2.3	M
10.	The child has frequent twitching or jerking of legs while asleep	53	66.25	9	11.25	6.0	7.5	5	6.25	7	8.75	1.8	M
11.	The child changes position during the night or kicks the covers off the bed	18	22.5	3	3.75	16	20	11	13.75	32	40	3.45	H
12.	The child has difficulty in breathing during the night	52	65	10	12.5	7	8.75	6	7.5	5	6.25	1.77	M
13.	The child gasps for breath or is unable to breathe during sleep	64	80	7.0	8.75	6	7.5	2	2.5	1	1.25	1.36	L
14.	The child snores	30	37.5	11	13.75	18	22.5	4	5	17	21.25	2.58	M
15.	The child sweats excessively during the night	49	61.25	9.0	11.25	12	15	3	3.75	7	8.75	1.87	M
16.	You have observed the child sleepwalking	76	95	2.0	2.5	1	1.25	1	1.25	0	0	1.08	L
17.	You have observed the child talking in his/her sleep	65	81.25	10	12.5	2	2.5	3	3.75	0	0	1.28	L
18.	The child grinds teeth during sleep	61	76.25	7	8.75	3	3.75	1	1.25	8	10	1.6	M
19.	The child wakes from sleep screaming or confused so that you cannot seem to get through to him/her, but has no memory of these events the next morning	59	73.75	9	11.25	4	5	4	5	4	5	1.56	M
20.	The child has nightmares which he/she doesn't remember the next day	62	77.5	11	13.75	1	1.25	3	3.75	3	3.75	1.42	L
21.	The child is unusually difficult to wake up in the morning	47	58.75	11	13.75	6.0	7.5	3	3.75	13	16.25	2.05	M
22.	The child awakes in the morning feeling tired	44	55	11	13.75	15	18.75	4	5	6	7.5	1.9	M
23.	The child feels unable to move when waking up in the morning	61	76.25	5	6.25	9	11.25	3	3.75	2	2.5	1.5	M
24.	The child experiences daytime somnolence	52	65	15	18.75	6	7.5	4	5	3	3.75	1.63	M
25.	The child falls asleep suddenly in inappropriate situations	56	70	8	10	12	15	1	1.25	3	3.75	1.58	M

F.=Frequency, %=Percent, MS=Mean of Score, L=Low level, M=Moderate level, H=High level

The findings of this table indicated that the mean of scores was low level on items (13,16,17,and 20),while items (1,2,3,4,5,6,7,8,9,10,12,14,15,18,19,21,22,23,24,and25) was moderate level. And High level on item (11).

Table 6. The association between sleep disorders for children with autism and age of the children

Scores	Good	Fair	Poor	Total	χ^2 obs.	Sig.
Age child (years)	F	F	F	F		
3-6	6	10	22	38	5.024	NS
7-10	2	8	20	30		
11-14	4	3	5	12		
Total	12	21	47	80		
$P \leq 0.05$ $df = 4$ $\chi^2 \text{ crit.} = 5.99$						

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table indicates that there is no significant association between sleep disorders for children with autism and age of the children.

Table 7. The association between sleep disorders for children with autism and gender of the children

Gender		Scores	Good	Fair	Poor	Total	χ^2 obs.	Sig.
			F	F	F	F		
Male			10	14	35	59	1.126	NS
Female			2	7	12	21		
Total			12	21	47	80		
P<0.05			df = 2		χ^2 crit. = 5.99			

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table shows that there is no significant association between sleep disorders for children with autism and gender of the children.

Table 8. The association between sleep disorders for children with autism and housing of the children

Housing	Scores	Good	Fair	Poor	Total	χ^2 obs.	Sig.
		F	F	F	F		
Urban		9	20	44	73	4.717	NS
Rural		3	1	3	7		
	Total	12	21	47	80		
P<0.05		df=2	χ^2 crit. = 5.99				

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table shows that there is no significant association between sleep disorders for children with autism and housing of the children.

Table 9. The association between sleep disorders for children with autism and educational level of the mother

Educational level of mother	Good	Fair	Poor	Total	χ^2 obs.	Sig.
	F	F	F	F		
Illiteracy	0	1	0	1	17.959	NS
Read and write	1	0	0	5		
Primary school graduate	2	0	1	3		
Intermediate School graduate	3	5	5	13		
High School graduate	2	4	7	13		
Institute or college graduate	3	11	31	45		
Total	12	21	47	80		
$P \leq 0.05$ $df = 10$ $\chi^2 \text{ crit.} = 18.31$						

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table indicates that there is significant association between sleep disorders for children with autism and educational level of the mother.

Table 10. The association between sleep disorders for children with autism and occupation of the mother

Scores	Good	Fair	Poor	Total	χ^2 obs.	Sig.
Occupation of the mother	F	F	F	F		
Work	6	10	32	48	3.121	NS
Do not work	6	11	15	32		
Total	12	21	47	80		
P<0.05 df = 2 χ^2 crit. = 5.99						

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table reveals that there is no significant association between sleep disorders for children with autism and occupation of the mother.

Table 11. The association between sleep disorders for children with autism and monthly income of the family

Monthly income of the family					χ^2 obs.	Sig.
Scores	Good	Fair	Poor	Total		
Income the family	F	F	F	F	2.228	NS
Adequate	6	12	33	51		
Not adequate	6	9	14	29		
Total	12	21	47	80		
P<0.05 df = 2 χ^2 crit. = 5.99						

df= degree of freedom; f= frequency; NS= Non-significant; P= Level of probability; Sig.= significance; χ^2 crit. = Chi-square critical; χ^2 obs. = Chi-square observed

This table reveals that there is no significant association between sleep disorders for children with autism and monthly income of the family.

DISCUSSION:

Through the data analysis distribution of demographic variables table (1) reports that most of the autistic children are (3-6) years old and this account for 38 (47.5%) of the sample. This result is similar to the results obtained from studies done by Malow (2006). These results indicate that the majority of autistic children ages are preschool age children. The researcher emphasizes that the children in this age group are more active and increase motor skills and increase needs to sleep⁽⁶⁾. Regarding gender of autistic children the majority of sample which account 59 (73.8%) are males. This finding is similar to the results obtained from study done by Patzold (1998)⁽⁷⁾. Concerning the housing most of the autistic children are live in urban house 73 (91.2%). These findings are supported by Richdale (1999)⁽⁸⁾. Table (2) indicates that the educational level of mother 45 (56.2%) of autistic children mother was graduate from institute or college. This result is consistent with the studies which indicate that the majority of autistic children mother was graduated from institute or college⁽⁹⁾. In relation to age of mother at the birth of the child 36 (45%) of mother the age at birth of the child were (20-29) years old. This result is in disagreement with some studies that the age of mother at birth of the child was (30-39) years old⁽¹⁰⁾. (60%) of mother work outside the home. This result is in agreement with a study which indicate that the majority of autistic children mother work outside the home (58%)⁽¹¹⁾. In relation to monthly income the majority 51 (63.8%) of the families the monthly income was

adequate. This result is not in agreement with study done by Rao; Beidel, and Murray, (2008). These studies indicated that the majority of the families the monthly income was not adequate ⁽¹²⁾. With regard to have a house for child care and receive instructions about taking care of him in their accommodation 40 (50%) of autistic children families have a house for child care, table (3). This finding is similar to the results obtained from study done by Williams (2004) ⁽¹³⁾. This finding indicates that the halves of autistic children receive care and instructions form a house for childcare. This result is inconsistent with the study, which indicates that the majority of autistic children are not have a house for childcare ⁽¹⁴⁾.

Table (4) indicates that the majority 28 (35%) of children get (6-7) hours of sleep on most nights. While the most of children 39 (48.8%) need to (15-30) minute after going to bed to fall asleep. This result is supported by Schreck and Mulick (2005); they indicate that the majority of children with autism get (7-8) hours of sleep on most nights. While the most of children with autism need to (15-30) minute after going to bed to fall asleep ⁽¹⁵⁾. Based on the results the researcher emphasizes the importance assessment of sleep disorder for children with autism because decrease the hours of sleep for those children and long time after going to bed to fall asleep. These disorder effects on daily activity of life.

Table (5) indicated that the mean of scores was low level on four items include items (the child gasps for breath or is unable to breathe during sleep, you have observed the child sleepwalking, you have observed the child talking in his/her sleep, and the child has nightmares which he/she doesn't remember the next day). This result showed that most of children with autism have sleep disorder. The result of present study agree with study done by Schreck, (2001) Prevalence rates of 41-86% for sleeping problems in children with autism have been reported. Sleeping problems predicted more intense symptoms of autism. Parents of children with autism wake up earlier and sleep fewer hours per night than parents of typically developing children ⁽¹⁶⁾. While table (5) show on twenty items are moderate level include (the child goes to bed reluctantly, the child has difficulty getting to sleep at night, the child feels anxious or afraid when falling asleep, the child startles or jerks parts of the body while falling asleep, the child shows repetitive actions such as rocking or head banging while falling asleep, the child experiences vivid dream-like scenes while falling asleep, the child sweats excessively while falling asleep, the child wakes up more than twice per night, after waking up in the night ,the child has difficulty to fall asleep again, the child has frequent twitching or jerking of legs while asleep, the child has difficulty in breathing during the night, the child snores, the child sweats excessively during the night, The child grinds teeth during sleep, the child wakes from sleep screaming or confused so that you cannot seem to get through to him/her, but has no memory of these events the next morning, the child is unusually difficult to wake up in the morning, the child awakes in the morning feeling tired, the child feels unable to move when waking up in the morning, the child experiences daytime somnolence, and the child falls asleep suddenly in inappropriate situations). This result disagree with study done by Hoffman, et al., (2005) that indicated the sleep problems are reported in most children with autism. Various aspects of sleeplessness (extreme difficulty getting to sleep, long periods of night waking, short duration sleep at night, early morning waking and consequent daytime sleepiness) are consistently the most commonly reported ⁽¹⁷⁾.

One item in table (5) the mean of scores for it was high level (The child changes position during the night or kicks the covers off the bed)

Table (6) indicates that there is no significant association between sleep disorders for children with autism and age of the children. This result agrees with results done by Elia, et al. (2000) which indicated there were no significant difference between age of the children and sleep disorders⁽¹⁸⁾. The study shows that there is no significant relationship between sleep disorders for children with autism and gender of the children. Table (7). This result agree with results obtained from study done by Hering, et al. (1999) which indicated that, there is no relationship between gender and sleep disorders for children⁽¹¹⁾. Analysis of the result of the study shows that there is no significant relationship between sleep disorders for children with autism and housing of the children. Table (8). This result agrees with Richdale (1999), which showed that there is no significant relationship between sleep disorders for children with autism and housing of the children⁽⁸⁾. Table (9) indicated that there is significant association between sleep disorders for children with autism and educational level of the mother. These finding agree with results obtained from a study done by Wiggs, (2001) which indicated that there is significant relationship between educational levels of mother and sleep disorders for children with autism⁽¹⁹⁾. Regarding the relationship between occupation of the mother and sleep disorders for children with autism the present study indicates that there is no significant relationship between sleep disorders for children with autism and occupation of the mother. Table (10). This result is in agreement with the study done by Acebo, et al. (2005). This study indicates no significant relationship occupation of the mother and sleep disorders for children with autism⁽²⁰⁾.

Analysis of the result of the study shows that there is no significant relationship between sleep disorders for children with autism and monthly income of the family. Table (11). This result agrees with Richdale (1999), which showed that there is no significant relationship between sleep disorders for children with autism and monthly income of the family⁽⁸⁾.

CONCLUSION:

The study concluded that most of children with autism have sleep disorder.

RECOMMENDATIONS:

1. Establish a nighttime routine: give child a bath, read a story, and put him or her to bed at the same time every night.
2. Help child relax before bed by reading a book, giving a gentle back massage, or turning on soft music. Avoid television, video games, and other stimulating activities just before bedtime.
3. To prevent sensory distractions during the night, put heavy curtains on child's windows to block out the light, install thick carpeting, and make sure the door doesn't creak.

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